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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/961,075	09/24/2001	Takao Takiguchi	684.3254	5216

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EXAMINER
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YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Applicati n No.

09/961,075

Applicant(s)

TAKIGUCHI ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09/24/01, 11/30/01 & later-filed IDS's.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 21-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-25 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,6-8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

(a) a metal coordination compound of formula (1) and a device comprising the compound wherein M is (i) Ir, (ii) Rh or (iii) Pd or

(b) a metal coordination compound of formula (2) and a device comprising the compound wherein M is (i) Ir, (ii) Rh or (iii) Pd, and Y is one of the formulae set forth on page 36 of the specification.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. In addition, applicant is required to select an ultimate species that will be used as the starting point for search and examination purposes. Currently, no claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Jason Okun on 03/14/03, a provisional election was made with traverse to prosecute species (a) (i), i.e. a coordination compound of formula (1) and a device comprising the compound wherein M is Ir. Claims 1-20 read on the elected species. (With respect to the properties recited in claims 5-9 and 16-20, some of ultimate species within the scope of species (a)(i) possess the recited properties while other ultimate species do not.) Compound 111 as defined in Table 6 (page 32 of the specification) was selected as the ultimate species. Affirmation of this election must be made by applicant in replying to this Office action. Claims 21-25 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it is too long. Correction is required.  
See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities:

Page 25 lines 6-8 describe Figures 1A to 1C as showing a liquid crystal.

Appropriate correction is required.

6. Claims 8, 9, 19 and 20 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for phenylpyridine metal coordination compounds of formula (1) having a substituent and peak emission wavelength as specified in claims 8, 9, 19 and 20, does not reasonably provide enablement for a metal coordination compound in general having a substituent and peak emission wavelength as specified in claims 8, 9, 19 and 20. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Claims 8, 9, 19 and 20 require a metal coordination compound limited only by a property of the compound and by a property of a substituent of the compound. It is the examiner's position that it would take undue experimentation on the part of one of ordinary skill in the art to determine the scope of metal coordination compounds encompassed by these claims given the numerous metals, coordinating ligands and substituents that can be combined to provide a metal coordination compound. The specification provides no guidance as to metal coordination compounds that might meet the limitations of these claims other than the phenylpyridine metal coordination compounds of formula (1).

7. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The language "capable of including one or at least two non-neighboring methylene groups which can be replaced with..." as recited in claims 1 and 12 is confusing. The minimum and maximum number of methylene groups that can be replaced with -O-, -S-, etc. is not clear.

The limitations imposed by the phrase "adapted for use in a luminescence device" as recited in claims 12 and 19 are not clear. It is not clear what constitutes an adaptation. It is not clear if there are some compounds represented by formula (1), in the case of claims 12-18, or having the specified substituent and peak emission wavelength, in the case of claims 19-20, that are excluded by the "adapted for use" language.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 8, 9, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Slyke et al. (US 5,150,006).

Van Slyke discloses aluminum coordination compounds having substituents having a Hammett's substituent constant greater than 0.2. In particular, see the last formula in column 16 and the first formula in column 17. The aluminum coordination compounds are disclosed as capable of emitting blue light and are taught for use in an electroluminescent device. Van Slyke does not disclose the peak emission wavelength in toluene at 25 °C, but it is the examiner's position that it is reasonable to expect that these compounds would exhibit a peak emission wavelength in toluene at 25 °C of at most 490 nm since the compounds are disclosed as blue light emitters.

10. Claims 1, 3, 10-12 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al. (US 2002/0034656 A1).

See Fig. 17 in particular. The iridium compound represented by the formula shown in Fig. 17 of this published application meets the limitations of a compound represented by formula (1) as defined in claims 1 and 12 and further defined in claims 3 and 14. (An alkyl group having two carbon atoms in which one methylene group is replaced by –O– is –OMe.) The iridium compound is disclosed for use as a light-emitting compound in an electroluminescent device.

This subject matter has an effective U.S. filing date of December 1, 1999, having been disclosed in Thompson's priority application, U.S. Application No. 09/452,346.

11. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Grushin et al. (US 2002/0121638 A1).

Grushin et al. disclose various iridium compounds of present formula (1) for use in a luminescent device. See the whole published application. In particular, see Table 1 and paragraphs [0118]-[0124].

Each of Grushin's compounds defined in Table 1 except for compound 1-m meet the limitations of a metal coordination compound represented by present formula (1) as set forth in claims 1 and 12.

Of the compounds defined in Table 1, compounds 1-b, 1-c, 1-d, 1-e, 1-h, 1-i, 1-j, 1-k, 1-l, 1-q, 1-r, 1-s, 1-t, 1-u and 1-v meet the limitations of the compound as further defined in claims 2 and 13.



Of the compounds defined in Table 1, compounds 1-a, 1-b, 1-c, 1-e, 1-h, 1-i, 1-j, 1-k, 1-l, 1-q, 1-r, 1-t, 1-u and 1-v meet the limitations of the compound as further defined in claims 3 and 14.

Of the compounds defined in Table 1, compounds 1-s, 1-t and 1-u meet the limitations of the compound as further defined in claims 4 and 15.

Of the compounds defined in Table 1, compounds 1-b, 1-c, 1-d, 1-e, 1-f, 1-g, 1-k, 1-l, 1-r, 1-s, 1-u and 1-v are compounds of present formula (1) wherein at least one of X2, X3 and X4 has a Hammett's substituent constant of at least 0.2 as required by claims 5, 8, 16 and 19.

Compounds 1-e, 1-f, 1-k, 1-r, 1-s and 1-u are compounds of present formula (1) wherein X2, X3 and X4 provide a sum of Hammett's substituent constant of at least 0.41 as required by claims 6 and 17. Compounds 1-e, 1-f, 1-k, 1-s and 1-u are compounds of present formula (1) wherein X2, X3 and X4 provide a sum of Hammett's substituent constant of at least 0.50 as required by claims 7 and 18. Compounds 1-s and 1-u are compounds of present formula (1) comprising at least two substituents each having a Hammett's substituent constant of at least 0.2 as required by claims 9 and 20. It is the examiner's position that, in view of present Figure 2, it is reasonable to expect that at least compounds 1-e, 1-f, 1-k, 1-s and 1-u would exhibit a peak emission wavelength in toluene at 25 °C of at most 490 nm. Accordingly, it is reasonable to expect that at least compounds 1-e, 1-f, 1-k, 1-s and 1-u meet the limitations of the compound required by claims 5-8 and 16-19, with compounds 1-s and 1-u further meeting the limitations of the compound required by claims 9 and 20.

12. Claims 1, 3, 10-12 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Igarashi et al. (US 2001/0019782 A1).

A compound represented by formula (1-6), (1-50) or (1-61) in Igarashi's published application meets the limitations of a compound represented by formula (1) as defined in claims 1 and 12. See pages 10, 15 and 16. A compound represented by formula (1-50) or (1-61) meets the limitations of the compound of formula (1) as further defined in claims 3 and 14. Igarashi et al. teach using the iridium compounds as light-emitting materials in electroluminescent devices.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

13. Miscellaneous:

In the fourth line after formula (1) in claims 1 and 12, there should be a semicolon after the second occurrence of "group".

In the penultimate line of claim 19, "25" should be deleted.

14. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Moore et al. (US 5,484,922) set forth Hammett constants for various substituents. See columns 7-10 of the patent. Moore et al. teach that peak emission wavelength of an aluminum

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chelate can be shifted to shorter wavelengths by proper selection of substituents on the quinoline rings of the chelate. For example, see column 6, line 59-c. 7, l. 28.

15. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (703) 308-4413. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax numbers for Art Unit 1774 are (703) 872-9311 for official after final faxes and (703) 872-9310 or (703) 305-5408 for all other official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (703) 872-9041.)

MRY  
03/21/03



MARIE YAMNITZKY  
PRIMARY EXAMINER

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